REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-29 are pending in this application. By this Amendment, Claims 1-6, 8-9, 12-13, 15-17, 20-25 and 28 are amended; and no claims are cancelled or added herewith. It is respectfully submitted that no new matter is added by this Amendment.

In the outstanding Office Action, Claims 1-3, 8, 12, 13, 16, 20-22, 24, 28 and 29 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,862,264 to Ishikawa in view of U.S. Patent No. 5,703,965 to Fu, U.S. Patent No. 5,495,538 to Fan and U.S. Patent No. 6,229,578 to Acharya; Claims 4-6, 15, 25 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of Fu, Fan, Acharya, and U.S. Reissue Patent No 35,414 to Murakami; Claims 7 and 27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa, Fu, Fan, Acharya, Murakami and in further view of U.S. Patent No. 6,621,909 to Webb; Claims 9, 10, 17 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of Fu, Fan, Acharya and in further view of U.S. Patent No. 4,162,482 to Su ; Claims 11 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of Fu, Fan, Acharya, Su and in further view of U.S. Patent No. 5,612,744 to Lee; and Claims 14 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishikawa in view of Fu, Fan, Acharya and in further view of U.S. Patent No. 5,791,271 to Futamura.

In response to the position set forth in the Advisory Action, Applicants respectfully assert that within the context of the present specification, "smoothing" and "removing" have the same meaning. However, to more clearly recite the features of the invention, the claims are amended by the present amendment. Specifically, "removing" has been amended to "unsharpening" and "removed" has been amended to "unsharpened." Applicants admit that

the exact word "unsharpening" is not recited in the original specification. However, Applicants respectfully submit that the newly recited features of the claims are not new matter since it is clear in the specification that "smoothing" is a reverse operation of "sharpening" which is recited in the specification. Accordingly, the meaning of "smoothing" is the same as the meaning of "unsharpening" in the context of the specification. For the reasons set forth below, it is respectfully submitted that the applied art do not disclose an unsharpened edge.

Claim 1 recites, in part, extracting edge information which is binary information representing an edge part of the original image, obtaining density information of an edge unsharpened image from the original image by unsharpening the edge part using the edge information, and obtaining coded density information by coding the density information of the edge unsharpened image according to a second coding algorithm. The applied art does not disclose these features.

Specifically, Ishikawa discusses an encoding process that produces a smoothed image GF suitable for fractal image compression by means of a smoothing process performed on an original image GA, as shown in Figure 1. Further, an edge image is obtained by subtracting the smoothed image from the original image (see e.g., step 14 of Figure 1, and the edge image GE). After the edge image is obtained, coding is performed. During image decoding, the edge image and the smoothed image are combined to output a restored image, as discussed with respect to step 23 of Figure 1.

Acharya discloses a method for removing noise by distinguishing between edge and non-edge pixels. All pixels classified as edge pixels are subjected to a second noise removal technique different from a first technique. The first noise removal technique is for pixels classified as non-edge pixels and a second noise removal technique for pixels classified as edge pixels. As discussed in Column 9, the edge pixel needs to retain the values of

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neighboring pixels that are also edges. When two different edge features are adjacent and have pixels adjacent to each other, then it is necessary to discriminate between them so that the wrong intensity value is not averaged together with the pixel under consideration. Thus, it is desirable to average together neighboring (adjacent) pixels that are both edge pixels and have similar intensity values with the pixel considered for noise removal. Accordingly, Acharya teaches an edge preservation/enhancement technique by removing noise, but does not disclose obtaining density information of an edge unsharpened image.

With respect to Claim 16, the applied art does not teach or suggest an edge restoring part for restoring the edge part of the edge unsharpened image by using the edge information such that a reproduced image is obtained. Instead, Ishikawa discloses that fractal decoding is accomplished based on the code data DF obtained by fractal image compression to obtain a restored smoothed image RF. Reversible decoding is accomplished based on the code data DE obtained by reversible image compression to obtain restored edge image RE. The final restored image RE is obtained by combining the restored smoothed image RF and the restored edge image RE.

It is respectfully submitted that there is no basis in the teachings of the applied art to support the applied combination. It is respectfully submitted that the combination of the art is the result of hindsight reconstruction in view of the teachings of the present specification, and is improper.

According to the features recited in for example Claim 1, the edge information, which is binary information, is extracted and the density information of an edge unsharpened image is obtained using the edge information. Then, encoding is performed. During decoding, each of the edge information and the density information of the edge unsharpened image is obtained by decoding, and the edge part of the edge unsharpened image is restored by using the edge information. Again, Ishikawa provides no teaching or suggestion for how one of
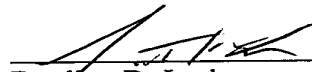
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ordinary skill in the art would perform analysis of the binary edge information. That is, Ishikawa is directed to obtaining a smoothed image and then an edge image is obtained by subtracting the smoothed image from the original image. Thus, Ishikawa does not provide enabling disclosure for a system that can analyze binary edge information.

Consequently, for the reasons discussed in detail above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

Respectfully submitted,

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